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DESCRIPTION OF THE DRAWINGS

Figs. 1a-3m. Representative front views of frames for gel diaphragm pure volume expansions.

Figs. ~~4a-5b~~ 3n-5b and 6a-6n Representative sectional view of inflatable restraint gel diaphragm assemblies.

Figs. 5c-5m. Representative sectional view of various gel diaphragms.

Figs. 5n-5t. Representative sectional view of various gel diaphragms with peripheral retainer.

Figs. 5u-5w. Representative sectional view of gel diaphragms with peripheral retainer and expansion control elements.

Figs. 7a-7d. Representation sectional view of expanded gel diaphragms.

Figs. 7e-7h. Representation views of pure gel volume expansion showing various restriction conformations.

Figs. 2a-2e. Representation front views of flange assemblies of expansion frames.

Figs. 8a-8f. Representation sectional view of gel diaphragms showing positions of various expansion films, sheets, and fabric.

Figs. 8g-~~8n~~ 8l. Representation front views of various films, sheets, thread and fabric patterns, scoring, and cuts.

Figs. 9a-9i. Representation of various gel diaphragm volume expansion configurations.

Fig. 10a. Conventional deployment timing profile of passenger side bag in milliseconds.

Fig. 10b. Deployment timing profile of passenger side volume expansion of gel in milliseconds.

Fig. 10c. Deployment timing profile of driver side volume expansion of gel diaphragm in milliseconds.

Fig. 10d. Deployment profile of driver side volume expansion of gel diaphragm showing enveloping cushion surround conformation on dummy.

Fig. 10e. Deployment profile of passenger side volume expansion of gel diaphragm showing enveloping cushion surround conformation on dummy.

Fig. 11. Typical conventional air bag deployment pressure plot showing positive pressure A, cover break pressure point B, time from negative pressure to positive pressure after cover tearseam break D, maximum air bag pressure E.

Fig. 12. Typical invention gel diaphragm deployment pressure plot showing positive pressure A, cover break pressure point B, time to maximum positive pressure after cover tearseam break E.

Figs. 13-15. Invention gel diaphragms deployment pressure plots showing various selected maximum positive pressure absent tear covers.

Figs. 16, 17a, 17b, 17c, 17d, and 18-23. Illustrates composites of the invention.

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Related Applications

This application is a continuation-in-part of ~~the following applications:~~ application 10/613567, filed 7/2/03 now US Pat. No. 7093316; and a continuation-in-part application of ~~10/420089~~ 10/420489 filed 4/21/02; and a continuation-in-part application of 10/420487 filed 4/21/03; and a continuation-in-part application of 10/420488 filed 4/21/03 now US Pat. No. 7134929; and a continuation-in-part application of 10/420490 filed 4/21/03 now US Pat. No. 7105607; and a continuation-in-part application of 10/420491 filed 4/21/03 now US pat. No. 7093599; and a continuation-in-part application of 10/420492 filed 4/21/03; and a continuation-in-part application of 10/420493 filed 4/21/03 now US Pat. No. 7067583; and a continuation-in-part application of 10/896047 filed 6/30/01; and a continuation-in-part application of 10/273828 filed 10/17/02 now US Pat. No. 6909220; and a continuation-in-part application of 10/334542 filed 12/31/02 now US Pat. No. 7159259; and a continuation-in-part application of 10/299073 filed 11/18/02; and a continuation-in-part application of 10/199364 filed 7/20/02 now US Pat. No. 6794440; and a continuation-in-part application of 09/721213 filed 11/21/01 now US Pat. No. 6867253; and a continuation-in-part application of 10/199361 filed 7/20/02 now US Pat. No. 7134236; and a continuation-in-part application of 10/199362 filed 7/20/02; and a continuation-in-part application of 10/199363 filed 7/20/02 now US Pat. No. 7108873; and a continuation-in-part application of 09/517230, filed 3/2/00; and a continuation-in-part application of 09/412886, filed 10/5/99; and a continuation-in-part application of 09/285809, filed 4/1/99; and a continuation-in-part application of 09/274498, filed 3/23/99 now US Pat. No. 6420475; and a continuation-in-part application of ~~08~~ 09/130545, filed 8/8/98 now U. S. Pat. 6,627,275. ~~; 08/984459, filed 12/3/97; 08/909487, filed 7/12/97; 08/863794, filed 5/27/97; PCT/US97/17534, filed 30 September 1997; U.S. Serial No: 08/719817 filed 9/30/96; U.S. Serial No: 08/665343 filed 6/17/96 which is a Continuation-in-part of U.S. Serial No: 08/612586 filed 3/8/96 (now US Patent No. 6552109); PCT/US94/04278 filed 4/19/94 (published 5/26/95 No. WO95/13851); PCT/US94/07314 filed 6/27/94 (published 1/4/96 No. WO 96/00118); 08/288690 filed 8/11/94; 08/581188 filed 12/29/95; 08/581191 filed 12/29/95; 08/581125 filed 12/29/95 now U.S. Patent No. 5,962,527. In turn U.S. Serial Nos. 581188; 581,191;~~

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~~and 581125 (now US Patent 5,962,572) are continuation-in-parts of the following applications: Serial Nos.: 288690, filed August 11, 1994 (now US Patent 5633286); PCT/US94/07314 filed June 27, 1994 (CIP of PCT/US 94/04278, filed 19 April 1994)~~. The subject matter contained in the related applications and patents are specifically incorporated herein by reference.

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At page 4, lines 1-15 as follows:

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retained gel cup, 32 partial retained gel cup, 33 gel cavity, 34 S gel shaped, 35 bulged gel, 36 compact assembly, 37 double layered, 38 multiple window, 39 double gel, 40 baffle, 41 gel dia., 42 expanded 7a-7d, 43 non-uniform gel dia., 44 gel restrainer, 45 restrained envelope, 46 non-uniform gel expanded mass, 47 expansion retainer assembly, 48 expansion control elements, 50 dual expansion dia., 52 single, 54 internal and external, 56 triple, 57 multiple layered, 58 triple internal, 59 triple small and dural large, 60 equal triple, 61 dural internal with single external surround dia., 10c driver gel dia., 10d enveloping driver dummy, 10e enveloping passenger dummy, 11 conventional air bag deployment, 12 ~~ge~~ gel and break-out pressures, 13 gel diameter expansion final pressures. The inflator (not shown) which is the source of the gas for deploying the gel into an expanded restraining cushion include an initiator, gas generator, filter/heat sink, and nozzle. The gas generator typically has only a single stage with fixed output. Typical propellants are sodium azide or nitrocellulose. Hybrid gas generators using stored gas and a solid propellant heating element are also available. The filter/heat sink removes particulate matter and reduces the temperature of the output stream from the gas generator before it enters the expansion region behind the gel. There can also be a wide nozzle for directing the inflator output stream onto the gel. Typically, inflators can also be staged.